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**Lenau, Torben Anker; Lindegaard, Hanne**

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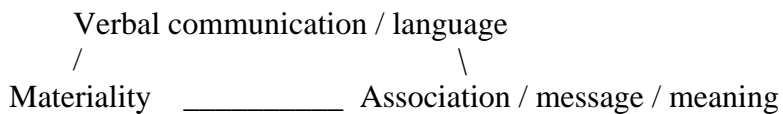
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## Objects, materiality and meaning

Torben Lenau & Hanne Lindegaard

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The present research work investigates the relation between physical objects, their materiality, understood as the physical substances they are made from, and the communication from the objects. In product design of physical objects the communicative aspects are just as important as the function of the object, and the designers aim is therefore to tune both in order to achieve a desired goal. To do so the designer basically has 2 options: Alteration of the physical shape of the object and the selection of materials. Through the manipulation of shape and materials can symbolic and sensory information be written into the object. The materials are therefore carriers of communication, even though this is dependent of the cultural context and the environment which the object will be part of. However the designer has only minor influence on those.



**Figure 1.** Materiality – verbal communication and meaning

From the designers point of view it is therefore important to know how precise the intended content of meaning is communicated – do users understand the messages in the same way? Apart from being important for the designer when shaping the object and selecting materials it is also essential that the designer can express the intended messages to the other actors in the design process so the final object corresponds with the original intentions.

An underlying hypothesis for our work is that people's preferences can be expressed through a few signals. A simple example of how preferences can be read from a few signals is how the owner in a kiosk often can predict the preferences of his customers and link their appearance with type of newspaper, cigarette brand and other types of goods they are likely to buy.

Our brains use a similar type of pattern recognition for night colour vision. When there is not enough light our eyes can only see grey-tones, but none-the-less we see many coloured objects at night – a banana will look yellow and a lawn appears green. The reason is that our brain compensates for the missing colour input from the eye and superposes the picture with the colours we from experience associate to the objects.

We also use such pattern recognition in looking at our surroundings where certain items are expected to look in a certain way. Sanitary ware for example we expect to be white (even though we are not conscious about it) but we notice it when we see something different like a black toilet. Designers are during the design process very much aware of the communicative aspects in product design, but are most often not equally focused on the precise verbal articulation of the messages build into the object and how this precisely is coupled to the shaping of the product and to the material selection.

The present work is an attempt to bridge research work earlier done on design semantics with research work in sociotechnical construction of everyday life.

The work on design semantics is described in (Johnsson et. al 2003, Lenau & Boelskifte 2004 and 2005). A result was the formulation of a list of often used words describing the sensory and symbolic attributes of objects. The lists were collected from texts describing designed objects like design magazines and museum catalogues and tested on students to uncover how precisely they communicated the message. The purpose of making the lists was to get a vocabulary for search engines used in material selection software.

Research in sociotechnical construction of everyday life is based on an understanding of objects as elements in a social network where people and objects interact (Latour 1999). This is described by actor-network theory (ANT) where the actors can be human (persons) as well as non-human (things).

Akrich (Akrich 1992) describe how designers inscribe visions of the world into the technical content of objects. She calls the result a “script” which can be read or de-scripted by people looking at the object. Parts of the script may be obvious to the observer, while other elements of it require special knowledge of the history of the object and the intentions behind it. For the sanitation the white colour represents “hygiene”, which was in-scripted into the sanitation design in the 1900<sup>th</sup> (Lindegaard 2008).

Shove (Shove et al 2007) is interested in how materials in themselves have a role in the meaning associated to objects in everyday life. They describe how the material in plastic objects like washing op bowls and Tupperware is associated to meanings that during time have changed from glorious futuristic visions to lower quality.

### **The Trapholt 2008 experiment**

In order to investigate the object – materiality – message problem area we have conducted an experiment that 56 of our students have carried out during a visit to the art and design museum Trapholt in Denmark. The students are in their first year on the design & innovation engineering education at DTU.




The experiment investigates whether it through a few describing words and iconic drawings is possible to identify a certain object, and the words therefore represent a clear communication. The experiment also has the purpose to expand the collection of examples of the coupling between object, material and meaning. Furthermore the experiment also serves the pedagogical purpose of training the students in decoding the layers of meaning for objects, in linking it to the selection of materials and in translating visual signals into verbal communication.

The experiment was planned as a game, where the students search for museum objects selected by other students. First the students made 2 introductory exercises that intended to sharpen their attention on verbal articulation of the communication of objects. Here the lists shown in figure 6 were used. In groups of 2 they selected objects from the museum collections and described minimum 4 associations they have to the object. The associations should relate to

- shape
- material
- sensory attributes
- symbolic attributes

The description should be formulated as a single word and – if possible – a quick simple drawing. The words describing the sensory and symbolic attributes could be selected from a list of words used in the introductory exercises or the students could formulate their own ones.

A test example is shown in figure 2 where a stainless steel Stelton coffee jug has been described. The associations are “bird” and “chimney” for shape, “B&O product” for material, “hard and cold” for sensory attributes and “expensive” for symbolic attributes. The drawing help emphasize what part of the object there is referred to, e.g. the shape of the chimney or the iconography in a stylised bird.









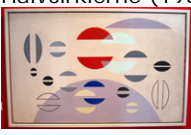

 <p>Shape</p>		<p>B &amp; O PRODUKT</p>  <p>Material</p>
<p>HÅRD KOLD</p> <p>Sensory</p>		<p>ELEGANT</p> <p>Symbolic</p>

**Figure 2.** A stainless steel Stelton coffee jug designed by Erik Magnussen described by associations related to shape, material, sensory and symbolic attributes.

The experiment was made on March the 12th and 30 objects were selected and described. 25 of those objects were found based on the description while other objects were found in the remaining 5 cases. A logbook describing the results was made (Lenau & Lindegaard 2008).

A first look of the result show a very satisfying result that seems to confirm our hypothesis: That it is possible to communicate semantic content through a few words. The majority of the objects were found and the remaining 5 had large similarities with the target object. For example does the ‘Suppose chair’ and the basket share many of the describing words: Shape like a beetle, inviting,

robust, raw and dark. The Danish chair and the New R/B chair are both angular and clumsy and are Ikea-like (the light colour wood?) and robust. The ‘Hvilestol’ and ‘ Klædeskab’ share associations to folded paper, silk-ribbons and Aids-ribbons. The ‘Munkegaardsstol’ and ‘Stol, stabelbar’ both look like fried eggs, pears and Chinese soup spoons. And the two paintings by Fransiska Clausen both refer to the shapes and colours in the Japanese flag.

Selected object	Found object	Shape association	Material association	Sensory attributes	Symbolic attributes
Søren Ulrik Petersen: Suppose Chair 	Klaus Titze: Rullekurv 	Organisisk Bille [tegning af bille] Indbydende	Robust Flet men let	Rå Mørk Glat afdæmpet	Elegant Eksklusiv sexet
Børge Mogensen: Den danske stol 	Magnus Sangild: New R/B chair 	Kantet klodset	Ikea og robust	Naturlig varm	Rustikt
Grete Jalk: Hvilestol (1963) 	Louise Cambell: Henslængt klædeskab 	Papirfoldning Gulvbrædder silkebånd	Flygel Aids sløjfer	Let varm stiv hård glat naturlig lugt hul lyd halvblank	Buttet Store flader Markant Dyr Enkel men samtidig kompleks futuristisk Feminin håndlavet eksklusiv virker svag
Arne Jacobsen: Munkegaardsstolen (1955) 	Steen Østergaard: Stol, stabelbar (1968) 	Spejlæg, pære, kinesisk suppeske [med tegninger]	Fjederdyr, legepladser [tegning af fjeder legedyr], Brio	Hård, (kold), let	Kvik, ung, minimalistisk
Fransiska Clausen: Halvcirklerne (1951) 	Fransiska Clausen: Cirkler og vertikaler (1930) 	Japans flag [tegning af rektangel med cirkel i midten]	Oile [tegning af en klat]	Afdæmpet blød	Pepsi [tegning af pepsi etiket] minimal

**Figure 3.** The 5 objects that were not found – and the ones that were found instead.

However there are a number of critical remarks to the experiment.

First do the students know each other fairly well and are not unfamiliar with semantic contents in products. This helps the experiment to a good result. If they had not known each other or were less schooled in products expressions a more unclear communication could be assumed.

Another possible criticism is that the objects are of the same kind (museum objects), that they in the museum are on display and taken out of context and that the number of objects are limited. However as it can be seen in figure 4 and 5 the rooms in the exhibition were very different. In some rooms (like in figure 5) the objects were put on traditional display and there were 15-20 objects in the same room – which in our experiment meant the amount of objects to choose from. In other rooms (figure 4) the number of parts was much higher (50-60) and they were arranged almost chaotically. It is not obvious from the results that there were differences in how easy it was to find objects in the 2 types of rooms.

Some of the results seem to contradict our hypothesis: They use a larger number of words (which we believe makes the communication more unclear) but the objects are found. The reason could be that the arrangement of words in 4 columns makes the students prioritise the significance of the words: If there are only one or two words in a column, these words will be more important than the ones in the column with 10 words.

Another experience we can draw from the experiment is that it is difficult for the students to be consistent with the use of categories. Some of the answers follow our instructions and use associations for describing shape and material while others use words from the lists in all 4 categories. However, this lack of precision in the use of categories does not limit the students in retrieving the objects.



**Figure 4.** Room with a large number of different objects



**Figure 5.** Room with a more limited number of objects

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Sansede karakteristika (sensory attributes)		Symbolske karakteristika (symbolic attributes)	
Kategori (category)	Ord (word)		
Form (form)	Organisk /fri form (organic)	Agressiv (Aggressive)	
	Afrundet (rounded)	Passiv (Passive)	
	Strømlinet (aerodynamic)	Billig (Cheap)	
	Kantet (angular)	Dyr (Expensive)	
	Flad (flat)	Klassisk (Classic)	
	Aflang (Long)	Trendy (Trendy)	
Farve (colour)	Varm (warm)	Klinisk (Clinical)	
	Kold (cold)	Hyggelig (Cozy)	
	Klar (clear)	Kvik (Clever)	
	Lys (light)	Dum (Silly)	
	Mørk (dark)	Almindelig (Common)	
	Kraftig (strong)	Eksklusiv (Exclusive)	
Glans (glossiness)	Afdæmpet (Muted)		
	Mat (matte)	Dekoreret (Decorated)	
	Halvblank (semi glossy)	Minimalistisk (Minimal)	
	Blank (glossy)	Sart (Delicate)	
	Blank transparent (glossy transparent)	Grov (Rugged)	
	Mat transparent (matte transparent)	Sløv/Kedelig (Dull)	
Overfladetekstur (texture)	Metallisk (metallic)	Sexet (Sexy)	
	Glat (smooth)	Anonym (Anonymous)	
	Ru (rough)	Markant (Inviting)	
	Gummiagtig (rubbery)	Elegant (Elegant)	
Følelse (feel)	Fedtet (slippery)	Kluntet (Clumsy)	
	Blød (soft)	Feminint (Feminine)	
	Hård (hard)	Maskulint (Masculine)	
	Varm (warm)		
	Kold (cold)	Formel (Formal)	
	Let (leight)	Uformel (Informal)	
	Tung (heavy)	Skrøbelig (Fragile)	
Lugt (smell)	Fleksibel (flexible)	Robust (Robust)	
	Stiv (stiff)	Venlig/Imødekommende (Friendly)	
	Frisk (fresh)	Skræmmende (Frightening)	
	Hengemt (stale)	Funktionel (Functional)	
Smag (taste)	Naturlig (natural)	Ornamenteret (Ornamental)	
	Kunstig (artificial)	Futuristisk (Futuristic)	
	Sød (sweet)	Historisk (Historic)	
	Sur (sour)	Håndlavet (Handmade)	
Lyd (sound)	Salt (salt)	Masseproduceret (Mass-produced)	
	Bitter (bitter)		
	Dæmpet / dump (muffled)	Teknisk komplekst (High-tech)	
	Hul (hollow)	Enkelt (Simple)	
	Klingende (ringing)	Morsom (Humorous)	
	Harmonisk (harmonic)	Alvorlig (Serious)	
Skinger (shrill)		Voksen (Mature)	
		Ung/Ungdommelig (Youthful)	
		Begrænset (Restrained)	
		Ekstravagant (Extravagant)	
		Midlertidig/Flygtig (Temporary)	
		Permanent/Varig (Permanent)	
		Svag (Weak)	
		Stærk (Strong)	

**Figure 6.** Sensory and symbolic attributes (used in Lenau & Boelskifte 2005)